

POPULATION CHANGE IN A PAPAGO
INDIAN COMMUNITY

by

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PREFACE

In 1960, and again in 1966, two censuses were taken of the Papago population on the San Xavier Indian Reservation near Tucson, Arizona. When compared, these two censuses revealed a 49.5% turnover in population. The immediate reasons for this turnover are known.

The basic problem is to determine the rates of turnover in a previously determined isolate, "previously determined" by the attitudes of prior researchers in relation to this community and other like communities. The study points out some of the difficulties that may be encountered by prejudging the nature of the unit to be considered.

The specific value of this study is that it provides a base for any further studies of population, culture or social interaction at San Xavier. Besides providing this basic material, it may serve as an illustration that the assumption of isolated communities is not always valid.

The primary field work for the second census was carried out in August of 1966. The great majority of the footwork was done by Thomas Cox and myself, visiting every house on the reservation. When certain small difficulties arose, such as language barriers with a few of the older people, Mrs. Ella Rumley assisted us. The secondary work-follow-up, checking, and rechecking, was accomplished at intervals over the next year by myself.

I owe special thanks to Bernard L. Fontana, Ethnologist, Arizona State Museum, who provided the opportunity for the field work and the suggestion for this thesis topic. Without his direction, encouragement, and patience, the value of this thesis would not have been realized.

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My colleagues, Thomas Cox and Ella Rumley, helped gather data in the field. Their work on the house to house survey on the Papago reservation is the basis for this thesis. Jan Hastings, and San Xavier residents, Molly Manual and Della Antone helped me clarify obscurities and define details in the data.

Marvin Mull, M.D., Director of Vital Statistics for Operation San at the U. S. Public Health Service Hospital, San Xavier, assisted me with statistics.

I wish to acknowledge the aid of Hazel Gillie, who typed and helped correct the manuscript, and Wes Jernigan, who drew the house map (Figure 2.).

To my wife, Ruth, who has born the brunt of the discomfort involved in reaching this plateau, I owe a debt of gratitude that cannot be expressed in a few lines of prose.

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ABSTRACT

This thesis points out problems related to describing Indian reservations as isolates. The reservations more closely resemble the mobile Anglo communities in demographic character than before supposed.

Population turnover rates and mobility rates on the San Xavier Reservation near Tucson, Arizona, are comparable with those of certain kinds of non-Indian populations and the areas of similarity and dissimilarity are pointed out. The randomness of the mobility on the reservation is surveyed and pertinent conclusions are drawn. The causation for the mobility is researched and recorded.

A study of the birth and death rates at San Xavier is made and comparisons are drawn with all Indians in the United States and with the over-all non-Indian population. The causes and ages at death are recorded and comparisons made.

An age distribution study is made and results are compared with national averages and with Fontana's age distribution figures from his census of 1960.

CHAPTER 1

INTRODUCTION

In 1960, Bernard L. Fontana took a census of the population of the San Xavier Indian Reservation near Tucson, Arizona. The purpose of the census was to provide some information on assimilative change in a Papago Indian community. Then, in 1966, under Fontana's direction, another census was taken by Thomas Cox and William C. Sifton. This census was taken to provide material for comparison with the first. It was hoped that some assessment could be made of the changes that had taken place. This thesis is an analysis of the demographic material from both censuses (Appendix I).

In prior research at San Xavier, it has been the assumption of researchers that the reservation community is an isolate. This assumption is more than likely the result of casual observation not connected to field data. Researchers have intuitively assumed that because there is a great deal of easily observable isolation on the social interaction level, the isolation would also exist in the demographic structure. When examining aspects of social interaction, such as voting or employment patterns, the breadth of social distance between the reservation and the non-Indian community of Tucson becomes evident.

At the time of the 1966 census, only 14% of the Papagos had jobs off the reservation, and only 28% of those jobs were permanent.

Or, in the case of voting, only three people out of 227 eligible voters as of August, 1966, were registered in January 1968. Both of these criteria indicate a very limited participation of Indians in off-reservation society. Factors such as these, as well as casual conversation with the residents of the reservation concerning their feelings about the surrounding non-Indian community, would lead the researcher to believe that the isolation is real. The following thesis argues for the incompleteness of this assumption.

Legal and Physical Description

The San Xavier Papago Indian Reservation lies to the south and slightly to the west of the City of Tucson, Arizona. The city limits are contiguous with a large part of the reservation boundary to the north.

The reservation area contains slightly over 111 square miles (Fig. 1). The residents, however, live within a nine square-mile area in the northeast corner of the reservation around Mission San Xavier. None live outside of this limited section of the reservation.

The landscape is relatively level except for a few hillocks in the vicinity of the Mission (Fig. 2). "Black Mountain" is the only large hill on the reservation. It is located southwest of San Xavier del Bac about two or three miles, and is an extruded basaltic flow. Black Mountain is relatively flat on top, and in the past, the Papagos ran cattle and horses there to prevent other Indians from stealing them. The landscape is generally covered with mesquite, palo verde, creosote bush, various cacti, and other smaller varieties of desert

flora. Because water is inaccessible to the Papagos, very little is gleaned from the land other than mesquite for fire wood for home use, and for purposes of sale to non-Indians. There are some mining leases in the southern portion of the reservation. A few Papagos work in the mines and many others receive lease monies, most of which are small amounts. Generally the land is unproductive for the Papagos.

Historical Notes

The first Indian settlers at San Xavier del Bac were a Piman-speaking group whom the Spaniards called Sobaipuris. Some of them had fled their original settlement site on the San Pedro Valley because of Apache raids, and had arrived at San Xavier in 1762. In 1859 another group of Papagos, the Kohatk, arrived at San Xavier. By 1869, nearly all members of these two groups were wiped out by what may have been malaria, or they may in part have emigrated to the west to the area today embodied by the main reservation.

Prior to the extinction or emigration of the Sobaipuris and the Kohakt, a number of Papagos of the Totokwan dialect group participated in transhumance activities between several villages to the west and San Xavier. The western villages included Achi, Sil Nakya, Havana Nakya, Ban Dak, and San Pedro. Achi was considered to be the parent village. When the two original groups disappeared, the transhumant Totokwan began to establish permanent residence in San Xavier.

Many of this group finally settled at San Xavier, and in 1874, a reservation was established for the Papagos. Most of the

Indians now living at San Xavier trace their origins to one of the above villages by kinship (Fontana 1960: 5-6).

It is interesting that marriages, mentioned later on in the text as a reason for mobility, are more often than not into one of these villages of origin. It would appear that the ties remain stronger than first supposed. Most of the movements of married couples are for economic reasons and are back and forth between San Xavier and the original villages.

CHAPTER 2

POPULATION TURNOVER

It was suspected that the rate of turnover on the San Xavier Papago Reservation was slight. This was based on observation by various anthropologists working in the vicinity, most particularly on the intuitive observations of Bernard L. Fontana. Fontana has lived adjacent to the reservation for nearly 12 years and he knows personally a large number of the residents. He felt that the population was increasing because of the new faces and new houses that appeared. What Fontana did not recognize was that there were missing faces too. The population had increased slightly, but the basic population had also changed in content.

When Fontana took the 1960 census there were 497 residents. This included all of those temporarily away at school. It did not include those who farmed at San Xavier part of the year and who then returned to the main reservation for the rest of it (Fig. 1). The people counted were all those who were in residence at the time of the census including the temporarily absent students.

In the 1966 census, 563 people were counted. This is an increase of 66 individuals. This census also included only those in residence at the time of the census and students who were away at school. People in local jails on misdemeanor charges were included,

but others institutionalized for any other reasons were not (Table 2).

An accounting was made of deaths and of the whereabouts of the residents who left the reservation during the interim between censuses. A record of births was compiled as well as points of origin of emigrants to the reservation. During the period between censuses, 139 individuals either left the reservation or expired. During the same period 205 individuals arrived or were born on the reservation. When the departures, which include deaths, are subtracted from the 1960 census and the remainder are added to the arrivals, which includes births, there are 13 persons who remain unaccounted for. These 13 persons are unaccounted for in the sense that their whereabouts is unknown (p. 15).

Given the above figures, the total counts in 1960 and in 1966, and the numbers of departures and arrivals, the turnover rate for the six year period is 49.5%, or an average 8.7% per year. To arrive at these figures I first took the difference between the totals of the two censuses and added that to the 1966 census total. I then added the departures to the arrivals, and finally divided the second figure by the first. This gives the quotient $49.5\% \pm 1.5\%$. The plus or minus is the result of the unaccountability of the 13 persons mentioned above.

Turnover by Settlement Clusters

Because during the course of the investigation I hypothesized that certain residence areas on the reservation had greater turnover rates in population than others, I divided the reservation into six

settlement clusters, using as closely as possible natural clusters of houses (Fig. 2). The assigning of the districts was arbitrary on my part, and there is no necessary connection between them and any geographic or demographic units as recognized by the Papagos. This was done to see if there was any truth in my supposition. One of the six units showed an unusually high turnover rate and one showed a very low turnover rate.

District 1 was defined as including the locally-named clusters called "Mouse Sits" and "Little Bush" in the northern portion of the reservation near Valencia Road. District 2 included "Many Ants" and all of the houses at the intersection of San Xavier Road, Twin Buttes Road, and Mission Road. The cluster adjacent to Mission San Xavier, called Bac, represents district 3. District 4 is the farthest south on the reservation and is made up of "Goat Drink," "Little Nogales," and "Skunk's Hanging." District 5 is to the east and represents mostly the new houses of the people who moved here from the flat area east of the Santa Cruz River and to the north of the San Xavier Loop Road because of the new freeway (U.S. Interstate 19) begun in 1966. The 6th and last district is made up of the scattered residences throughout the rest of the reservation. Most of the people in the 6th district are attempting to farm or are associated with farming and are, in fact, rural dwellers (Fig. 2).

I felt that the population living in the 2nd district especially was less permanent in composition than that of any of the other districts. I also felt that the populations in the 3rd and 6th

districts were of a more permanent nature. This was only partially borne out by an analysis of the data.

A "Z" score for a 95% confidence interval was applied to the number of new individuals as opposed to the number of permanent residents. In other words, I compared the population present only in the 1966 census with the population present for both. The people present only in the 1960 census were not included because it was not possible to determine exactly where they had lived. I will assume that the above group, people present for the 1960 census only, were distributed much the same as the people present for the 1966 census only. The assumption is made because the majority of the houses existing on the reservation were present for both censuses, either an original or a rebuilt structure, and the turnover probably represents simply the moving in and out of existing structures.

Table 1 demonstrates that in one of the districts there is a significantly higher rate of population turnover than in the other five. District 2 shows a much greater proportion of turnover. There are also a larger number of new houses in this district than in any other. The district 5 proportion falls within the confidence interval but it appears to be too small a population to make a valid judgment. District 6, the scattered rural residences, falls outside the confidence limits with very little in the way of turnover.

It is interesting to note the randomness of the distribution of the new population, with the exception of districts 2 and 6. Although more permanency was expected in district 3, it was not made

Table 1. Distribution of new residents by arbitrary district and test for randomness of distribution using 95% confidence interval.

<u>District</u>	<u>Permanent Residents</u>	<u>New Residents</u>	<u>Expected Proportion</u>	<u>95% Confidence Interval</u>
1	57	31	.362	.253-.451
2	46	51	.362	.427-.635
3	111	65	.362	.299-.439
4	56	29	.362	.242-.440
5	20	16	.362	.281-.607
6	63	13	.362	.087-.255

evident by the research, and although there are two districts which do not fit the random distribution there is an indication of settlement by kinship through the research methods in which location of kin was noted.

It was found that there are absolutely no families living on the reservation without one member being able to trace legitimate kinship at least through a cousin, to some other family living there, usually at the minimum of one degree of collaterality. Because there is a tendency for Papagos to live with or near the extended family unit, the new family would be expected to settle according to the residence of the nearest relatives at San Xavier. New people coming to the reservation are related to randomly distributed permanent residents, and, therefore, settle according to where their nearest kin happen to live.

People do not move onto the reservation without the right to be there according to the traditional patterns of Papago social organization. San Xavier's transient population does not have the same character as non-Indian transient populations. The residence pattern is determined by kinship, not by economics, but it is very likely that the chief reason for moving on or off the reservation is an economic one.

Comparative Material

To understand better the nature of modern Papago migration patterns some form of comparison should be made with other populations. The most logical population with which to compare that of San Xavier

would seem to be specific Anglo rural communities. This, however, turned out to be unsatisfactory due to the steady rate of attrition from rural to urban areas. This provided no real basis for comparison inasmuch as the San Xavier population increased its size in six years.

Instead, comparison with the U. S. Census Bureau figures for the United States describing population mobility proved to be more appropriate. This description of mobility concerns itself with populations segregated in terms of legal political units. Figures are presented for mobility within cities, within counties, within states and, finally, interstate.

At this point, it becomes necessary to make definitive statements as to what "mobility" is according to the U. S. Census Bureau, and what "turnover" is in relation to this thesis. Mobility, according to the U. S. Census Bureau, is the movement of any individual one year of age or older out of, or into, a previously-designated legal political unit. Turnover, in relation to this thesis, includes all movement into or out of the reservation, including births and deaths. These are two distinctly different definitions. For the purposes of comparison, births and deaths will be eliminated from the reservation turnover rate, and a straight comparison of mobility as defined by the U. S. Census Bureau will be used.

The broad category for comparison in the U. S. Census Report with the Indian reservation is all movement into and out of the legal political unit described as a county. For the purposes of this

thesis, the reservation will be considered to be the same as a county. The primary reason that the county was used is because there is no comparable data available from other Indian reservations. A county seems to be the most comparable unit to the reservation. There are some similar aspects of both. They are both usually rural and their political structures are similar. It is obviously not an exact comparison, but it is the best of the available data.

There are several categories in the U. S. Census Report, inclusive in the broad category above, related to geographic areas, metropolitan areas, and racial characteristics of mobility. The comparisons will be made with the broad category and then with the several lesser divisions of that category.

According to the U. S. Census Bureau Report (1966: 12), mobility, relating to movement in and out of all counties in the western United States, is 8.6% for the year inclusive between March 1965, and March 1966 (the last year included in the San Xavier census study). The mobility for rural counties for the period was 9.2% higher than the 5.8% six year average for San Xavier. For the urban counties, the mobility was 8.0%, which was also higher. If the entire United States was to be considered, the mobility rate was 6.6%. San Xavier's mobility rate compares more favorably with the latter.

When the mobility rate for the entire United States is further subdivided by considering metropolitan areas only, the comparison with San Xavier is more valid. The metropolitan areas are subdivided into the internal city, for which the rate is 5.1%, and into the

surrounding area, for which the rate is 7.1%. San Xavier fits into the latter category because of its proximity to Tucson, Arizona.

One other comparison should be made; that of San Xavier's mobility rate with non-white populations in the metropolitan areas. The metropolitan non-whites within the city had a mobility rate of 3.9% while the non-white population in the surrounding community had a rate of 4.1%. San Xavier's mobility rate of 5.8% is significantly higher.

Considering the fact that the San Xavier reservation mobility rate so closely approximates that of comparable non-Indian demographic units, and that the non-Indian units are usually not studied as total isolates by anthropologists, it must be evident that to consider reservation communities as legitimate cultural isolates in an anthropological sense is questionable. Given the fact that people move on and off the reservation to more traditional Papago communities and into the Anglo urban centers, these people are participating in the culture differentially. Their cultural isolation is therefore difficult to characterize. Biologically they are considerably more isolated than any Anglo community due to the fact that the movement is kin oriented. If the problems are approached in a topical sense, and with an awareness of the tenuous demographic situation, anthropological studies of modern reservation should have more validity.

CHAPTER 3

CAUSES OF MOBILITY AT SAN XAVIER

The first portion of this chapter concerns itself with the causes for mobility as defined in Chapter 2. Although certain causal categories relate to such factors as marriage, or moving to relatives' homes, the underlying reason for most of the moves is economic. The specific economic reason, in most cases, was not determinable. Whenever an informant indicated economic cause, I will mention the fact in relation to the material described.

The actual figures for mobility and births and deaths are as follows: Mobility; those that left the reservation, 81, and those that came to the reservation, 117; births, 88; deaths, 58.

Causes for Departure

The two most important categories causing people to leave the reservation represent 55.8% of all the departures. Both of these categories are economic in nature. The first, representing 19 out of the 68 persons leaving the reservation during the six year census period, consists of those who left to take jobs off the reservation. The majority of those jobs were in southern Arizona, but one was in Phoenix, Arizona, one in the midwestern United States, and two were in California.

The second category, also representing 19 out of 68 departures, consists of those people who have moved to their original homes on the main Papago reservation after unsuccessful attempts at maintaining permanent jobs in the Tucson area. In most of these cases, a job was acquired before moving to San Xavier, and then the job was terminated. According to my informant, these people generally found living at San Xavier too difficult without a job. They were more easily able to sustain themselves on the main reservation by family based agriculture or through extended family support. In some cases, individuals returned to their original homes because of the pressures of the more acculturated life of San Xavier.

The third largest category is comprised of the children of divorced parents and who are living with the parent who moved from San Xavier. There are twelve such children, six from one family.

Seven people are residing at various public institutions. Six of the seven are at homes for the aged and the other is a child at the Arizona Children's Colony (home for retarded children). There were five individuals, all women, who married off the reservation and who are now living with their husbands. The last four categories are; two individuals living at boarding schools, two living with relatives off reservation, one in the military service, and one in the Arizona State Penitentiary (Table 2).

The first two categories, those primarily involved with employment patterns, indicate that San Xavier is a more convenient location for individuals who wish to work in the more lucrative employment

Table 2. Reasons for departure, for men and women, from reservation during six year census period by number and percentage.

<u>Category</u>	<u>Number</u>	<u>% of Departures</u>
Returned to Point of Origin	19	27.9
Moved Because of Employment	19	27.9
Children with Divorced Parents	12	17.7
Non-Penal Institutions	7	10.3
Married to Non-Resident Off Reservation	5	7.4
Boarding School	2	2.9
Living with Relatives Off Reservation	2	2.9
Military Service	1	1.5
Penal Institutions	1	1.5

area of Tucson. Again, it is important to recognize that San Xavier can only be used as a community of convenience if there are kinship ties available (Table 2).

Reasons for Settlement at San Xavier

The people coming to San Xavier can be divided into two segments: those who are returning to their original homes at San Xavier, and those who are moving to San Xavier for the first time.

The largest group of those who returned were those people who came back after terminating jobs off the reservation and who had moved nearer the jobs for the sake of convenience. There were 20 individuals in this category. Some of these people could not integrate themselves into off-reservation society and others were not able to retain their jobs. Related to this group is the largest number of returnees, children who came back to the reservation with their parents when the reason for off-reservation residence terminated. Thirty-seven such children returned to the reservation with their parents, all of them born prior to the 1960 census.

The last two categories include one of five people who had been living with relatives off-reservation and who returned, and one person who had been away at a boarding school during the 1960 census.

Within the second group of people, those moving to San Xavier for the first time, the largest number were those who came to stay with relatives. They represent a large variety of kinship ties and their reasons for moving to San Xavier were many. Some probably came because of work; some were old people who needed care; and some were

children who lost their parents because of death or divorce. There were 22 people who moved to San Xavier to live with relatives.

Another group who moved to San Xavier were people who came because of jobs. Of the 15 in this group, three were family heads and the rest were spouses and children.

The two remaining categories present an interesting set of factors. The data present a picture of residence patterns of newly-married couples. In the past, the tradition of Papago residence pattern was verilocal (Underhill 1939: 180). It was determined that between the censuses of 1960 and 1966 eight males moved to the San Xavier reservation to live with their spouse's family, and that nine females moved to San Xavier to live with their spouse's family. Oscar Lewis (1966) has suggested that matrifocality is a symptom of the "Culture of Poverty." The accentuation of the female role, due to economic factors, in relation to the diminishing importance of the male, has produced a shift from patrilocality to matrilocality. It has been implied that this change in residence patterns among the Papagos is the result of a form of Lewis' "Culture of Poverty." The fact that there is no specific pattern of settlement of newly marrieds at San Xavier does not really confirm this supposition, but there seems to be some indication that there is a shift of pattern. The shift could also be the result of the long-proposed hypothesis that the more sedentary a group becomes, the more likely they are to shift from patrilocality to matrilocality (Steward 1955: 169). Both of these hypotheses are potentially testable on the San Xavier reservation (Table 3).

Table 3. Reasons for arrival or return to San Xavier. (The categories are mutually exclusive.)

<u>Category</u>	<u>Number</u>	<u>% of Arrivals</u>
Children Returned with Parents	37	31.6
Moved in with Reservation Relatives	22	18.8
Returned Due to Termination of Off-Reservation Jobs	20	17.1
New Residents (for work)	15	12.8
Off-Reservation Female Married to Resident	9	7.7
Off-Reservation Male Married to Resident	8	6.8
Returned from Living with Off-Reservation Relatives	5	4.3
Returned from Boarding School	1	0.9

As shown above, the greater proportion of people establishing themselves at San Xavier between the 1960 and the 1966 censuses, were those who were returning after a self-imposed absence. Most of the causes for absence among the returnees were in some way related to economics. Of the people moving to San Xavier for the first time, some of the reasons may have been economic, but a large proportion of the moves were for strictly personal reasons.

CHAPTER 4

BIRTH AND DEATH RATES AND AGE DISTRIBUTION

The birth and death rates at San Xavier for the six year period between the 1960 and 1966 censuses were averaged on a yearly basis. The comparative figures from the U. S. Public Health Service (1966) were from the year 1963, the last year available. From the figures for 1960 to the figures for 1963 there was a slight drop in the rates, and assuming that the rates continue to drop at the same rate until 1966, it is a fair assumption that 1963 represents a mean average of the six year period. The age distribution at San Xavier was compared with Fontana's figures for 1960 and the U. S. Census Bureau figures for 1966.

Birth and Death Rates

In the year 1963, among all races in the mountain states, the birth rate was 23.75 per 1000 per year. In the same year, among all Indians in the mountain states, the rate was 43.2, almost double according to the U. S. Public Health (1966). At San Xavier, the birth rate average for the six year period was 26.4 per year, close to the all races average for the mountain states. There is no explanation I know for the dissimilarity between the San Xavier Papagos and all other Indians' birth rates.

There were 66 children born to residents present for both the 1960 and 1966 censuses and 29 children born to residents who arrived during the interim between the two censuses. The ratio of births among the new residents to those among the permanent residents is less than the ratio of new residents to permanent ones. Of the births, there were 30.5% to new residents, and 69.5% to permanent residents. The ratio of new residents to permanent is 48.5% for the former to 51.5% for the latter.

There were a total of 65 deaths at San Xavier during the six year period between the 1960 and 1966 censuses. The death rates and causes were compared with the tables in the Public Health Service manual (1966) also. The death rate for all races per 1000 for 1963 was 9.4. The death rate for all Indians per 1000 was 9.3. The death rate for San Xavier Papagos per 1000, taken on an average for the six year period, was 20.6, a much higher rate than either of the other two groups. There was no discernible reason for the high death rate at San Xavier. There is an easily accessible out-patient clinic at San Xavier, so it would appear that medical attention is not a factor. The proportions of causes of death approximate those of other Indian populations, so that there does not seem to be any outstanding unusual circumstance causing the high death rate.

Although there was a high number of people for whom the causes of death are unknown, as well as some in the category of miscellaneous causes, the ones for whom the causes are known match in frequency very closely to the causes of death of Indians on most other reservations.

There were 39.4% of deaths in the category of unknown or miscellaneous.

The percentage of deaths caused by accidents at San Xavier very nearly match that of accidental deaths for all other Indians: 18.3% for the former and 18.8% for the latter. The majority of these at San Xavier were automobile accidents. Only two out of 12 were other types of accidents. There were seven, or 10.6%, deaths caused by heart disease at San Xavier as compared with 15.9% for all other Indians and 38.9% for all races in the United States. When observing the great discrepancy between heart disease death among Indians as compared with all races it was first assumed that the Indians had less because they did not reach an age where heart disease would become a factor. When this assumption was tested by observing ages at death, it was determined that it was a valid assumption.

When it was first determined that 58.2% of the Indian population at San Xavier lived to the age of 45, I felt that heart disease should be more of a factor in the causes of death. But when the fact that 94% of all the races population of the United States live to the age of 45, it indicates that in fact the Indians may not live long enough for heart disease to become a real factor in death rates. Age 45 was chosen as the breaking point as a factor in heart disease because the U. S. Health and Welfare figures in the manual "Indian Health Highlights" (1966) show the group 45-65, among the all races category, as the first group really effected by heart disease.

The rest of the categories of cause of death match relatively well with the over-all figures on all Indian deaths. In some cases, however, they are slightly different due probably to the small sample available (Table 4).

The age distribution at death was determined using those people for whom the age was available. The ages for 55 out of the 65 deaths recorded are tabulated by percentage (Table 5).

There are two more categories of cause of death that should be noted. The first of these relates to homicide, of which there was one recorded, and the second, which relates to suicide. In the second category, there were two recorded cases. These two cases of suicide represent 66 suicides per 100,000 of population per year at San Xavier as compared with the United States average of 18.1 per 100,000 of population.

Age Distribution

A survey of the age distribution was made of those Papagos at San Xavier whose ages are known. Two comparisons were made, one with Fontana's age distribution figures from the 1960 census, and one with the Bureau of Census (1968) figures for 1966 from the west and mountain states for total population.

In comparing the 1966 census age distribution figures with the 1960 age distribution it was determined that there are some changes. But the over-all picture has remained much the same. Fontana indicated that approximately one-third of the population in 1960 was less than 15 years old and that by far the largest percentage at

Table 4. Percentages of deaths by cause.

<u>Cause</u>	<u>San Xavier %</u>	<u>All Indian %</u>	<u>All Races %</u>
Accidents	18.3	18.8	5.8
Heart Diseases	10.6	15.9	38.9
Malignant Neoplasms	1.5	8.1	16.1
Pneumonia	4.5	7.0	3.3
Infancy	10.6	7.0	3.4
Vascular Lesions	1.5	6.4	11.0
Cirrhosis of Liver	4.5	3.1	1.3
Internal Infections*	7.6	2.5	0.5
Tuberculosis	1.5	2.2	1.8
Diabetes		2.2	0.5
Other Causes or Unknown	39.4	26.8	17.4

* Gastritis, Colitis, Enteritis, etc.

Table 5. Age of specific death rate by number and by percentage.

<u>Age Group</u>	<u>Number</u>	<u>Percentage</u>
Under 5	7	12.7
5-15	0	0.0
15-25	1	1.8
25-35	7	12.7
35-45	8	14.5
45-55	5	9.1
55-65	6	10.9
Over 65	<u>21</u>	<u>38.2</u>
Total	55	100.0

that time were in the 5-14 age bracket. He also pointed out that in the 1937 census this was also the largest group and that they should have been represented in the 25-34 group by 1960 but more than half had disappeared (Fontana 1960: 23). In the 1966 census, 44.3% of the population was less than 15 years old.

The large group in the 1960 census, the 5-14 year group, which should be in the 15-24 group in the 1966 census, does in fact appear as a rather large group. That one age group, 15-24 is the major discrepancy between the 1960 census age distribution and the 1966 census age distribution (Table 6).

The percentage in the 15-25 group in the 1966 census has dropped from what it was as the 5-15 group in 1960, indicating that the largest migration from the reservation may well be among the young people as Fontana (1960: 25) assumed in 1960.

Considering the great difference of age distribution at San Xavier compared with the total population in the west and mountain states, as shown in the Bureau of Census (1968: 9) figures, it is suggested that this is true. The largest percentage among the total population is in the 19-45 age group, while at San Xavier the largest percentage is among the 6-18 age group (Table 7).

If the problem is looked at another way according to Table 5, there is a large percentage of deaths (27.2%) in the group from 25 to 44. If this group is equated with the under 45 group in Table 7, the drop in number could also be a function of the increased death rate. The decrease in percentage at San Xavier of the under 45 group is more

Table 6. Comparison of age distribution between the 1960 census and the 1966 census.

<u>Age Group</u>	<u>1960 Census %</u>	<u>1966 Census %</u>
Under 5	10.0	15.7
5-15	27.0	28.6
15-25	11.0	17.4
25-35	15.0	11.9
35-45	10.0	8.7
45-55	9.0	6.3
55-65	11.0	5.7
Over 65	9.0	5.7

Table 7. Comparison of age distribution of the total population in the western and mountain states of the United States with San Xavier Indian population.

<u>Age Group</u>	<u>% Total Population West and Mountain States</u>	<u>% 1966 San Xavier Census</u>
Under 5	11.3	15.7
5-18	28.3	37.8
18-45	34.4	28.9
45-65	18.0	11.9
Over 65	8.0	5.7

likely the result of a combination of migration and death rather than either by itself.

CHAPTER 5

SUMMARY

San Xavier, a relatively small, separate extension of the Arizona Papago reservation consists of a population whose number has remained fairly constant at around 500 people. It was an ideal unit for a demographic study because of its size and because other demographic work had been done there very recently. Bernard L. Fontana made the most recent study in 1960 and so, most of my work in 1966 was compared with his. This study and the comparisons made with Fontana's should have value as a basis for other types of studies.

The study should point out some of the pitfalls in assuming that modern Indian reservations are population isolates and provide some criteria for determining their actual consistency and isolation. At least the fact that the reservations are viable and mobile populations should be taken into consideration or acknowledged.

There are very real factors of social isolation from the non-Indian community and the fact is, that most of the viability and mobility takes place within the confines of the total Papago reservation. Nevertheless, it does exist. Much of the mobility is related to kinship residence patterns and therefore restricted.

The population at San Xavier has increased slightly since 1960, about equally divided between births and new residents. The turnover of population, taking into account immigration, emigration,

births, and deaths, is the most significant point to make in relationship to the relative isolation of the reservation. The turnover rate was 49.5%. Normally births and deaths are not included as mobility by government agencies such as the Bureau of Census but they were included in at least part of the discussion to emphasize the nature of the population.

The reservation community was divided into districts by settlement clusters to determine whether there were areas of greater mobility. I discovered that the mobility was in fact random. When the mobility rate was compared with national averages there was a great deal of similarity. The Papagos do a lot of moving, probably much more than the study reveals. There was undoubtedly much moving onto and off the reservation between the 1960 and 1966 censuses that was not revealed because the people did not appear in either census.

The causes of mobility in most cases appeared to be related to some economic function. Jobs on and off the reservation are acquired and terminated for relatively short periods of time, thus affecting the mobility of the San Xavier Papago. Some portion of the new residents came to the reservation more for personal reasons than economic, but the latter, in most cases, is the overriding consideration.

Birth rates at San Xavier are relatively low compared with other Indian groups and are comparable with the non-Indian rates in the United States. Death rates were considerably different than either the rates for other Indians or for the non-Indian population.

Both of the latter two categories are about the same, while the San Xavier Papagos' rates were double. There was no discernible reason for this discrepancy. The Papago Indians at San Xavier also live a shorter life, as do other Indians, than non-Indians. The largest proportion of Indians, by age distribution, are in the age group of less than 25 years. The largest proportion of non-Indians are in the age group of 25 to 45 years. Both the factors of mobility of the young and the early age death rate must be considered in the lower percentage of people present on the reservation in the over 25 year age group.

APPENDIX I

The census was taken in August of 1966 by William C. Sifton and Thomas Cox. An outline of the information required was given to us by Bernard L. Fontana and a questionnaire was developed from this (Appendix II). Using a house map provided us by Fontana, one that he made from his census in 1960, we systematically visited every house on the reservation. We located a competent, in the sense of knowledgeable about birth dates and names and relationships, member of the household and asked the pertinent questions.

We first asked the names, ages, and amount of schooling of each member of that particular household. Then we asked the relationship of each to the others. Next we asked the parents' names and siblings' names of each of the members of the household. Finally, we asked the work experience of all those in the household. After the sociological questioning was completed, we recorded the house type, mapped it, and then recorded the presence or absence of utilities and various household appliances.

Certain categories on the questionnaire were difficult, if not impossible, to obtain: income earned and sources, and the names of ex-spouses. The other categories were answered with at least 98% completeness.

The ages of the residents seemingly are accurate to the best of the knowledge of the informants. There was very little discrepancy between the ages given to Fontana in 1960 with those given to me in

1966. Only when the individual was over 50 years of age was there real discrepancy noted, and approximately 30% of those were different. When an individual was over 60 years of age, there might be as much as three years discrepancy. The reliability may be related to the fact that the San Xavier Mission was centrally located and birth records and baptismal records for all of those born on the reservation are retained there. Also many of the residents have worked in Tucson at one time or another, and pertinent dates are necessary for jobs in the Anglo community.

Death rates and causes of death are easily accessible because of the Public Health Service Hospital located in the community.

After the initial census in 1960 was taken, it was compared with Fontana's and the departures and arrivals were noted. Two informants were located that were prominent in the community and who had a great deal of knowledge about most of the residents. These informants were asked about the whereabouts of those absent, and from where the newcomers came. They were also asked about the reasons for the movements. The birth rates came from the census material and the death rates and causes were acquired from the Bureau of Ethnic Research and the U. S. Public Health Service.

APPENDIX II

This Appendix is an example of the questionnaire used in the 1966 census.

NAME OF INTERVIEWER _____ DATE _____

HOUSE NUMBER _____

NAME OF HEAD OF HOUSEHOLD _____

COMMENTS: _____

(E) EXPIRED

(D) DIVORCED

(S) SEPARATED

(1) OFF RESERVATION

(2) PAPAGO

(3) GILA BEND

1 RESIDENTS HEAD OF HOUSE

2 FAMILY NAME
LAST
FIRST &
Initial

3 RELATIONSHIP TO
HEAD OF HOUSE

4 DATE OF
BIRTH & SEX

5 LAST SCHOOL
ATTENDED

6 HIGHEST GRADE
COMPLETED

7 MILITARY
EXPERIENCE

8

OCCUPATIONS

9 SPECIAL SKILLS

10 INCOME ESTIMATE

11 INCOME EARNED

INCOME UNEARNED

12 HOME VILLAGE

13 PARENTS
FATHER LAST
FIRST &
Initial

MOTHER LAST
FIRST &
Initial

14 EX SPOUSES

15 SIBS
1
2
3
4
5
6

(Continuation for expanded information)

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

HOUSE DESCRIPTION:

CONSTRUCTION:

FRAME _____

ADOBE - SUNDRIED _____

BURNT _____

BLOCK _____

BRICK _____

OTHER _____

REASON FOR USING CONSTRUCTION MATERIAL _____

NUMBER OF ROOMS _____

DATE BUILT _____

ELECTRICITY _____

EQUIPMENT: REFRIGERATOR _____ TV _____

STOVE (GAS) _____ RADIO _____

STOVE (ELEC.) _____ WASHER _____

STOVE (WOOD) _____ OTHER _____

SEWING MACHINE _____

WATER SOURCE _____

WHEN INSTALLED _____

HOT _____ INSIDE _____ OUTSIDE _____

TOILET _____ SHOWER _____ BATH _____

RESIDENCE STABILITY _____

APPENDIX III

The following data are available:

1. Name
2. Sex
3. Age - in most cases, actual birth date
4. Birthplace
5. Identification by residence
6. Position in genealogy - (not complete)
7. Year and month of death of deceased persons

Data for the following categories for further studies or analysis are available:

1. General Fertility
 - a. Crude birth rate
 - b. General fertility rate
 - c. Age-specific birth rates
 - d. Fertility ratio
 - e. Total maternity ratio
 - f. Child-woman ratio
 - g. Gross reproduction rate
2. Mortality - Life Span - Life Tables
 - a. Crude death rate
 - b. Age-specific death rate
 - c. Life-interval rates

3. Rate of Replacement
 - a. Population number through time
 - b. Crude rate of natural increase
 - c. Gross reproduction rate
 - d. Net reproduction rate
4. Differential Fertility
 - a. Genealogies (incomplete)
 - b. Differences in completed family size
 - c. Generation length
5. Sex Ratio
 - a. General population ratio
 - b. Age-specific
 - c. Sex ratio by birth order
 - d. Sex ratio by parental age
 - e. Shifts in alternate generations
 - f. Sibship ratios
6. Average generation length
7. Effective breeding size
8. Population structure
9. Distribution of births and deaths throughout the year
10. Sterility rate

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